

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 15, 16, and 28 are pending in the present application. Claims 15 and 28 have been amended by the present amendment. No new matter has been added. See the Specification page 29, lines 5-9.

In the outstanding Office Action, Claims 15, 16, and 18 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent 5,291,293 to Fukushima et al. in view of U.S. Patent 5,291,293 to Kapan.

The present invention (Claim 15 as amended) is directed to an image processing circuit of an image input device which performs a predetermined image processing of an image photographed by an image pickup device having a pixel array in the image input device. The circuit includes, in part, a real time processing unit, a central processing unit, and a main memory disposed outside of the real time processing unit. The central processing unit is disposed separately from the real time processing unit, and is configured to provide exceptional image processing not including the general image processing provided by the real time processing unit.

The real time processing unit includes a defective pixel compensation block that includes a shift register with a plurality of registers connected in series, to which defective pixel addresses stored in the main memory are inputted sequentially and outputted sequentially. Additionally, the main memory is configured to interchange data with the real time processing unit by direct memory access and to store pixel data outputted from the real time processing unit.

As a consequence of this configuration, the complexity of the real time processing unit can be reduced. In particular, the real time processing unit is not required to store

address data of defective pixels of the image pickup device, and image data stored as frames in the main memory can be subjected to software processing via the central processing unit.

See the Specification page 48, lines 14-25, and page 34, line 23 – page 35, line 1.

Additionally, the direct memory access enables the load on the central processing unit to be reduced by enabling data interchange between the real time processing unit and the main memory. See the Specification, page 29, lines 5-9.

The official action concedes that Fukushima et al. fail to teach that the main memory 212 stores pixel data outputted from the real time processing unit. Applicants agree. However, the official action further asserts that Kapan teaches storing defective pixel addresses and image data in a single memory and that it would have been obvious to modify the imaging apparatus of Fukushima et al. to store the image data in the memory 212. Applicants respectfully traverse.

As illustrated in Figure 2 and stated in column 4, lines 19-27 of Kapan, redundant imaging data is obtained by sensors 10 and 12, digitized by A/D converters 32 and 33, and stored in memory unit 36. The redundant digitized image data stored in memory unit 36 is combined by the control processor 34 if both sensors 10 and 12 are functional, or the data of a functional sensor is doubled prior to being forwarded to an image processor. However, Kapan fails to teach or suggest that the image data is stored in the unit of a frame. Kapan also fails to teach a real time processing unit, in addition to the control processor, which interchanges data with the memory unit using direct memory access. Consequently, Kapan does not teach a configuration which enables storage of processed image data. Additionally, Kapan does not teach a configuration where the correction amplifiers 20, 22, and 24 can access the data of the memory unit directly. Thus, Kapan does not address the deficiencies of Fukushima et al..

For the foregoing reasons, Fukushima et al. fail to anticipate or render obvious the

subject matter defined by independent Claims 15 when considered alone or in combination with Kapan. Claim 28 defines, among other things, the features discussed above with regard to claim 15. Consequently, claim 28 is also believed to be allowable. Dependent claim 16 is also believed to be allowable for at least the same reasons that claim 15 is believed to be allowable.

Consequently, in light of the above discussion and in view of the present amendment, this application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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